

Applicant: Dietmar BAUMANN et al.  
Docket No. R.305656  
Preliminary Amdt.

**AMENDMENTS TO THE SPECIFICATION:**

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2]      CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4]      This application is a 35 USC 371 application of PCT/DE 2004/001389 filed on July 1, 2004.

Please replace paragraph [0000.5] with the following amended paragraph:

[0000.5]      Specification    **BACKGROUND OF THE INVENTION**

Please replace paragraph [0001] with the following amended paragraph:

[0001] Prior Art      **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention relates to an improved electromechanical partial-lining disk brake with self-boosting[[,]], having the characteristics of the preamble to claim 1. A partial-lining disk brake is understood to be a disk brake whose friction brake lining, and any friction brake lining carrier, extends over only a portion of the circumference of the brake disk, typically over less than a quarter circle, unlike a full-lining disk brake, in which the friction brake lining, or a friction brake lining carrier ring equipped with a plurality of friction brake linings, extends over a full circle, or in other words, the brake disk covers the entire circumference. A full-lining disk brake is disclosed by German Patent Disclosure DE 198 19 564 A1.

Please add the following new paragraph after paragraph [0002]:

[0002.2]      Description of the Prior Art

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Please add the following new paragraph after paragraph [0002.2]

[0002.4] A partial-lining disk brake is understood to be a disk brake whose friction brake lining, and any friction brake lining carrier, extends over only a portion of the circumference of the brake disk, typically over less than a quarter circle, unlike a full-lining disk brake, in which the friction brake lining, or a friction brake lining carrier ring equipped with a plurality of friction brake linings, extends over a full circle, or in other words, the brake disk covers the entire circumference. A full-lining disk brake is disclosed by German Patent Disclosure DE 198 19 564 A1.

Please replace paragraph [0003] with the following amended paragraph:

[0003] Disk brakes of ~~this kind~~ the type with which this invention is concerned are known per se. They have an actuating device with an electric motor, with which a friction brake lining is displaceable via one or more gear mechanisms and can be pressed for braking against a brake disk. Many wedge or ramp mechanisms are used as a self-booster, which guide the friction brake lining displaceably, obliquely at a typically acute angle to the brake disk. If the friction brake lining is pressed for braking against the rotating brake disk, then the brake disk exerts a frictional force in the circumferential direction on the friction brake lining, and this force urges the friction brake lining in the direction of an increasingly narrow wedge gap between the wedge or ramp and the brake disk. Because of the bracing of the friction brake lining on the wedge or ramp, the wedge or ramp exerts a contact pressure on the friction brake lining, as a reaction force, which additionally to the force exerted by the actuating device presses this friction brake lining against the brake disk. This kind of wedge or ramp mechanism forms a mechanical self-booster, which converts a frictional force,

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exerted by the rotating brake disk on the friction brake lining pressed against it, into a contact pressure that presses the friction brake lining against the brake disk.

Page 2, please replace paragraph [0004] with the following amended paragraph:

**[0004] ~~Explanation and Advantages of the Invention~~**

**SUMMARY AND ADVANTAGES OF THE INVENTION**

Please replace paragraph [0005] with the following amended paragraph:

**[0005]** The partial-lining disk brake of the invention, ~~having the characteristics of claim 1,~~ has a self-booster with a ramp mechanism, whose ramps extend helically and concentrically to one another and at least approximately coaxially to an axis of rotation of the brake disk.

When the friction brake lining is pressed against the brake disk for braking, the ramps of the ramp mechanism guide the friction brake lining both transversely to the brake disk and approximately in a circular arc in the circumferential direction to the brake disk; that is, for braking, the friction brake lining is guided along an at least approximately helical path to the brake disk. The motion of the friction brake lining transversely to the brake disk can also be called feeding, or feed motion. The simultaneous motion in the circumferential direction need not extend either exactly in a circular arc nor exactly coaxially to the axis of rotation of the brake disk. An approximately circular-arclike guidance of the friction brake lining approximately coaxially to the brake disk suffices. The release is likewise done helically, in the opposite direction.

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Page 4, please delete paragraph [0008].

Please replace paragraph [0009] with the following amended paragraph:

[0009] ~~Claim 3~~ **One embodiment** provides three balls as roller bodies of the ramp mechanism, which brace the friction brake lining upon braking and which roll on the ramps upon the displacement of the friction brake lining. The three balls are disposed at the corners of an imaginary triangle; they form a three-point support for the friction brake lining. In this way, a statically defined and hence play-free bracing, despite tolerances, of the friction brake lining is attained.

Please replace paragraph [0010] with the following amended paragraph:

[0010] ~~Claim 5 provides a~~ **A** retainer **may be provided** for the roller bodies, which keeps the roller bodies in their spacing from and in their position relative to one another. The retainer is a so-called ball cage, of the kind known in ball bearings. The retainer assures a synchronous motion of the roller bodies.

Please replace paragraph [0011] with the following amended paragraph:

[0011] ~~According to claim 6, the~~ **The** partial-lining disk brake of the invention has an encapsulation of moving parts. Encapsulation **as used herein** means a casing that protects moving parts of the disk brake against dirt. Such moving parts are for instance a caliper guide, which guides a floating caliper of the disk brake displaceably, transversely to the brake disk (~~claim 7~~). The actuating device and the self-booster also have moving parts, which according to the invention may have an encapsulation (~~claim 8~~). The advantage of encapsulating moving parts is that soiling and a consequent increase in wear and in friction are avoided. Since the moving parts are lubricated, for instance provided with grease, to

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reduce friction, dirt sticks unless it is kept away by an encapsulation according to the invention. The mixture of grease and dirt forms a kind of abrasive paste, which quickly wears away the lubricated parts moving relative to one another. Another advantage of the encapsulation is that a lubricant is kept at the moving parts and is not lost. The encapsulation makes permanent lubrication with a lubricant supply possible. Friction that remains the same within the closest possible limits is important for a disk brake that has self-boosting, since friction affects the magnitude of the self-boosting.

Page 5, please replace paragraph [0012] with the following amended paragraph:

[0012] Features of the invention, and in particular the ramp mechanism ~~of claim 1~~, the retainer for the roller bodies ~~of claim 6~~, the three-point support ~~of claim 3~~, the encapsulation of moving parts ~~of claim 7~~, and a contate gear mechanism ~~of claim 10~~, may be realized jointly with other features or individually on their own.

Please replace paragraph [0013] with the following amended paragraph:

[0013] Drawing      **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0014] with the following amended paragraph:

[0014] The invention is described in further detail below, ~~in terms of an exemplary embodiment shown in the drawing. Shown are~~ with reference to the drawings, in which:

Please replace paragraph [0015] with the following amended paragraph:

[0015] Fig. 1[[,]] is a sectional view, seen radially from outside, of an electromechanical disk brake of the invention; and

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Please replace paragraph [0016] with the following amended paragraph:

[0016] Fig. 2[[],] is a view of a ramp plate of the disk brake, in the direction of the arrow II in Fig. 1.

Page 6, please delete paragraph [0017].

Please replace paragraph [0018] with the following amended paragraph:

[0018] ~~Description of the Exemplary Embodiment~~

**DESCRIPTION OF THE EXEMPLARY EMBODIMENT**

Please replace paragraph [0019] with the following amended paragraph:

[0019] The electromechanically actuatable disk brake 10 according to the invention, shown in Fig. 1, is a partial-lining disk brake 10; that is, its friction brake linings cover a brake disk 16 only partly in the circumferential direction, over less than a quarter-circle in the exemplary embodiment of the invention shown and described. The partial- lining disk brake 10 has a brake retainer 12, on which a brake caliper 14 is guided displaceably, transversely to a brake disk 16. The brake caliper 14 is accordingly a so- called floating caliper. For guidance of the brake caliper 14, the brake retainer 12 has two bolts 18, disposed vertically perpendicular to the brake disk 16, on which bolts bushes 20 that are connected to the brake retainer 12 are guided displaceably. For reducing friction, slide bearings 22 are inserted into the bushes 20. The bushes 20 are sealed off with sealing rings 24 on the bolts 18, so that a grease filling in the bushes 20 is retained, and water is prevented from entering. Dirt scraper rings 26 are inserted into the bushes 20 on the outsides of the sealing rings 24 and prevent dirt from entering. The bolts 18 and the bushes 20 form a caliper guide 23 for the floating guidance,

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that is, guidance displaceable transversely to the brake disk 16, of the brake caliper 14. The bushes 20 form an encapsulation of the caliper guides 23 of the brake caliper 14, which are sealed off by the sealing rings 24 and the dirt scraper rings 26 against an escape of grease and a penetration of water and dirt. The reverse disposition of the bushes 20 on the brake retainer 12 and of the bolts 18 on the brake caliper 14 is also possible.

Page 7, please replace paragraph [0022] with the following amended paragraph:

[0022] The sealing rings 24 and the dirt scraper rings 26 brace the brake caliper retainer 12 against tilting, because of their disposition laterally beside the slide bearings 22. The slide bearings 22 are not acted upon by a tilting moment that results from a force of gravity of the brake caliper [[12]] 14 that engages laterally of the slide bearings 22.

Please replace paragraph [0023] with the following amended paragraph:

[0023] The bushes 20 are solidly joined via webs 28 to a housing 30, which is part of the brake caliper 14. The housing 30 is a shallow, box-shaped housing 30, which in a side view, not shown, is curved in a circular arc to correspond to a circumference of the brake disk 16. The housing 30 is closed with a housing cap 32 on a side facing away from the brake disk 16. The housing cap 32 supports an electric motor 34, whose imaginary motor axis extends parallel to the plane of brake disk 16 and intersects an imaginary axis of rotation of the brake disk 16.

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Page 8, please replace paragraph [0026] with the following amended paragraph:

[0026] The two ramp plates 38, 40 are braced against one another via three balls 44, 46, 48, which are disposed between the ramp plates 38, 40. For guiding the balls 44, 46, 48, congruent, groovelike indentations are made in opposed faces[[;]] oriented toward one another, of the ramp plates 38, 40 and form ramp paths or simply ramps 50, 52, 54. The shape and course of the ramps 50, 52, 54 can be readily seen in the view of the moving ramp plate 40 shown in Fig. 2. The ramps 50, 52, 54 extend along an imaginary circular-arc line 57 about a common, imaginary axis, which at least approximately coincides with an axis of rotation of the brake disk 16. Because of the disposition of the ramps 50, 52, 54 on the circular-arc line 57, the ramps 50, 52, 54 and thus also the balls 44, 46, 48 are located at the three corners of an imaginary triangle 58 (Fig. 2); the balls 44, 46, 48 form a statically defined three-point support for the two ramp plates 38, 40.

Page 15, please add the following new paragraph after paragraph [0040]:

[0041] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.